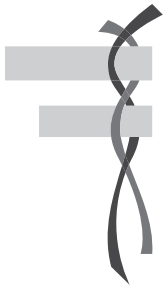


**Fabrications** introduces basic fabric construction techniques for young people to learn to weave, braid, twine, wrap and knot yarns into decorative textiles. A final Design Challenge requires youth to design and create a personal piece utilizing skills learned in these beginning projects.

Available at [ecommons.cornell.edu](http://ecommons.cornell.edu) and <http://www.human.cornell.edu/fsad/outreach/programs/youth-programs/index.cfm>



# FABRICATIONS

## Fabrications 1 - PLAIN WEAVE

### CORK COASTER

**Plain** weave is the simplest of woven fabric structures with the vertical (warp) and horizontal (weft) elements interlaced in an over-1-under-1- pattern. These fabrics resist snags, wear well and provide a sturdy foundation for surface design. They do, however, ravel easily and have lower tear strength than other weaves. Common plain-weave fabrics include cheesecloth, chambray, muslin, broadcloth, organdy and canvas.

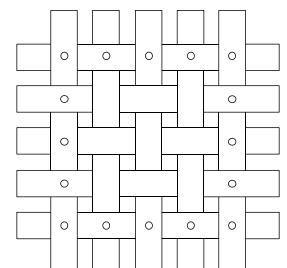
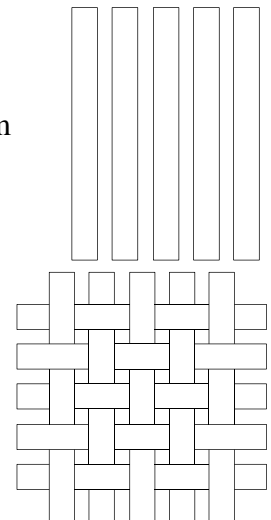


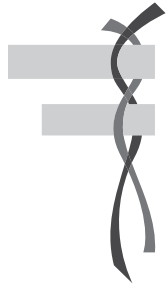
#### Materials:

- 10 cork strips ½ inch wide and 4 inches long (you can use larger strips if you like)
- Glue/Glue Gun
- Toothpicks
- Scissors

#### Instructions:

1. Cover the work surface with newspapers or plastic wrap to protect it from the glue.
2. Place 5 strips vertically (warp) leaving a small space between the strips.
3. Weave the remaining five strips horizontally (weft) in an over-1-under-1- pattern, again leaving a small space between the strips.
4. Glue the strips together around the perimeter – place a small dot of glue in the center of the two strips to be joined; quickly spread the glue using a toothpick; and press firmly for several seconds.
5. Trim uneven edges (see photo.)





# FABRICATIONS

## Fabrications 2 - TWILL WEAVE

### CORK COASTER



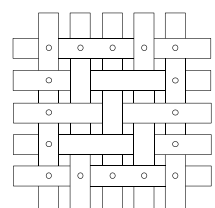
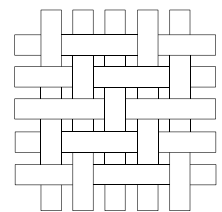
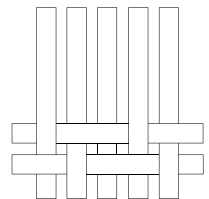
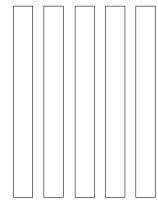
**Twill** weaves are fabric structures in which the vertical (warp) and horizontal (weft) elements interlace in a repeated but staggered pattern, including 2/1 (under-2-over-1), 2/2 (under-2-over-2), 3/1, 3/2, etc. Twill weaves are strong, durable, and supple, but they can fray if they are loosely woven. Twill weave fabrics include denim, drill, flannel and gabardine.

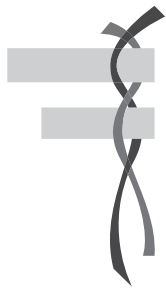
#### Materials:

- 10 cork strips ½ inch wide and 4 inches long (you may use larger strips if you like)
- Glue/Glue Gun
- Toothpicks
- Scissors

#### Instructions:

1. Cover work surface with newspaper or plastic wrap to protect it from the glue.
2. Arrange 5 strips vertically (warp) leaving a small space between the strips.
3. To begin, weave horizontally (weft) right to left, under 1, over 2, with one of the remaining five strips, leaving a small space between the strips.
4. With a second weft strip, stagger the pattern one warp to the left, keeping the under 1, over 2 pattern.
5. Repeat with remaining strips, each time staggering the pattern one warp to the left.
6. Glue the strips together around the perimeter by placing a small dot of glue in the center of the two strips to be joined. Quickly spread the glue using a toothpick and press firmly for several seconds.
7. Trim any uneven edges (see photo.)





# FABRICATIONS

## Fabrications 3 - SATIN WEAVE

### CORK COASTER

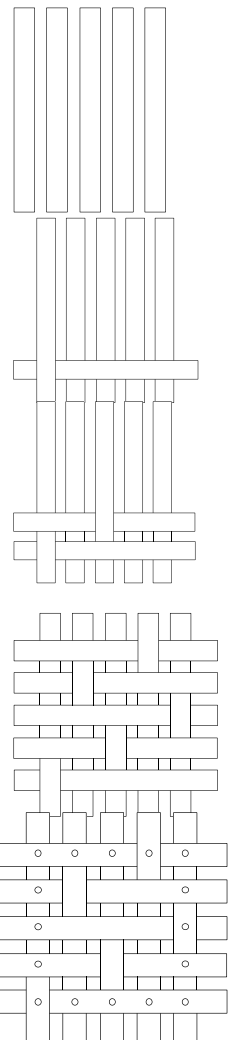
**Satin** weave fabrics are smooth and luxurious. Their smooth surface sheds dirt. Disadvantages of the satin weave include high manufacturing costs as well as an easily snagged surface.

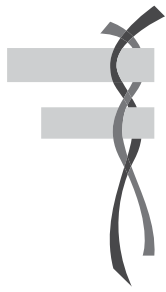
#### Materials:

- 10 cork strips ½ inch wide and 4 inches long (you may use larger strips if you like)
- Glue/Glue Gun
- Toothpicks
- Scissors

#### Instructions:

1. Cover work surface with newspaper or plastic wrap to protect from glue.
2. Place 5 strips vertically (warp) on the board with a small space in between each strip.
3. From right to left, weave horizontally over 4, under 1, with one of the remaining five strips, leaving a small space between the strips.
4. Repeat the pattern with one of the remaining four strips, but stagger the pattern two warps to the left.
5. Repeat with remaining strips, each time staggering the pattern two warps to the left.
6. Glue the strips together around the perimeter by placing a small dot of glue in the center of the two strips to be joined. Quickly spread the glue using a toothpick and press firmly for several seconds.
7. Trim off any uneven edges (see photo.)





# FABRICATIONS

## Fabrications 4 - BRAIDED BRACELET

**Braids** or plaits are made of strands of flexible materials that are interlaced in a diagonal pattern. The strands may be flat or tubular, long or short, smooth or textural. Braids are most familiar to us as rope, jewelry, or hair plaits. Let's have fun with a simple 3-strand braid.



### Materials:

- 3 strands pearl cotton embroidery thread, 12 inches in length of color 1 (C1)
- 3 strands pearl cotton embroidery thread, 12 inches in length of color 2 (C2)
- 3 strands pearl cotton embroidery thread, 12 inches in length of color 3 (C3)
- Masking tape

### Instructions:

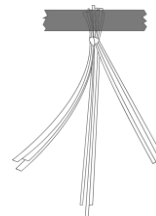
1. Use an overhand knot to tie together the nine threads, leaving about 2 inches at one end.



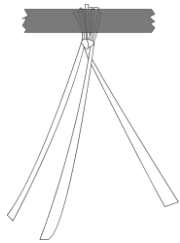
2. Tape the knotted end to the table to stabilize it.



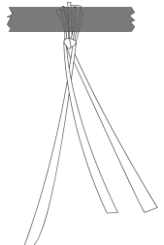
3. Divide the threads into 3 equal groups: C1, C2 and C3.



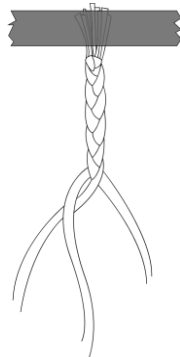
4. Cross the group on the right over the center group (the right group now becomes the center group.)



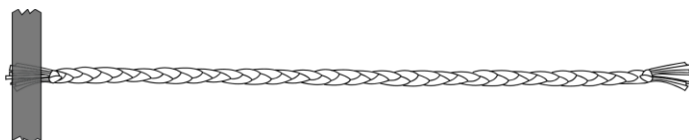
5. Cross the left group over the center group (the left group now becomes the center group.)

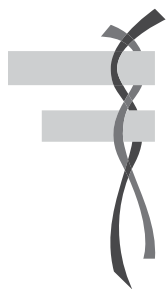


6. Repeat these two actions until the braid is long enough to pass over your hand and encircle your wrist.



7. Knot the end and cut the threads leaving about a 2-inch tail. Tie the two ends together to make a circle.





# FABRICATIONS

## Fabrications 5 - WRAPPED KEYCHAIN

**Wrapping** yarns around other yarns adds color as well as strength, and creates interesting texture. This technique is used with a wide variety of materials such as wire, thread, and hair.

### Materials:

Pearl cotton embroidery thread (DMC perle 5 works well)

- 1 yard of color 1 – C1
- 1 yard of color 2 – C2
- 6 12-inch lengths of color 3 – C3

### Key Ring

### Instructions:

1. Knot together C1 and C2 to make one 2-yard thread.



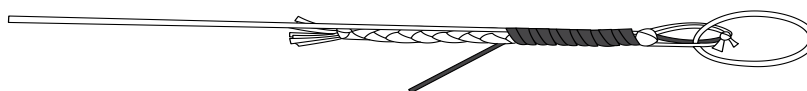
2. Fold all threads in half, aligning the center folds of the C3 threads with the fold (knot) of the C1-C2 thread.

3. Slip the key into the fold created with the C1-C2 and C3 threads.

4. Using an overhand knot, tie together all threads approximately one inch from the ring.

5. Separate C3 threads into 3 groups of 4; braid, and knot. Do NOT incorporate the C1-C2 threads.

6. Holding the braid and C2 together, wrap C1 tightly around both until you want to switch colors.



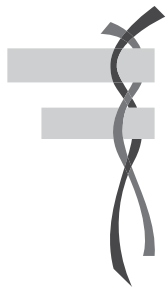
7. Holding the braid and C1 together, wrap C2 tightly around both, leaving about 2 inches of loose threads at the end.



8. Add a bead or other decoration at the end if you wish; overhand knot all the threads.







# FABRICATIONS

## Fabrications 6 –

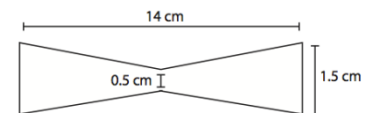
### TWINED mini BASKET



**Twining** is the twisting of two strands of flexible material alternately around a support. This technique creates shape as well as adds stability to woven fabrics and baskets. Twining is an ancient technique that allows one to weave without a loom.

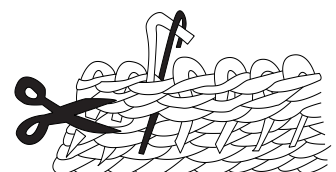
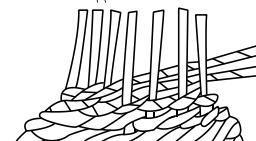
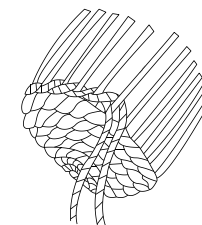
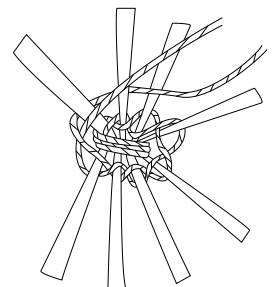
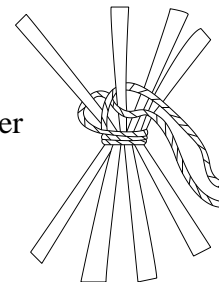
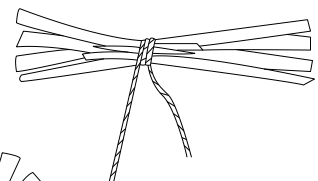
#### Materials:

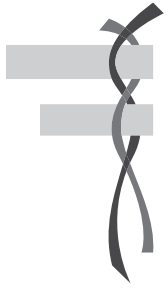
- 4 pieces of construction paper for spokes/warp, 1.5 cm (5/8") wide and 14 cm (5 1/2") long, shaped like a bowtie with centers of 0.5 cm (1/4") width
- Heavy string or twine for weft (4.5 yards minimum)
- Scissors; large-holed, blunt-ended tapestry needle



#### Instructions:

1. Stack paper spokes.
2. Fold string in half over center of papers and wrap three times around the center.
3. Fan out spokes of paper and weave one end of the string over and under each spoke, at the same time weave the other end of the string under and over each spoke.
4. Continue twisting the string around the spokes to create a spiral.
5. After 3-6 rounds, the bottom of the basket is complete. Bend the spokes straight up and continue twining to make the sides of the basket.
6. When the basket is the size you want, lay the ends of the string parallel to the inside rim of the basket.
7. Bend each spoke inwards over the rim. Secure each spoke by tucking the ends of the paper into the twined string about two rows down.
8. Use tapestry needle to weave in twine, and trim excess with scissors.





## FABRICATIONS

### Fabrications 7 - GHIORDES KNOT

#### MINI RUG or COASTER



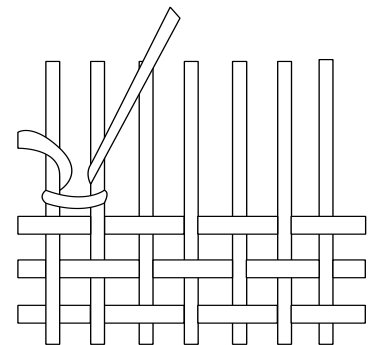
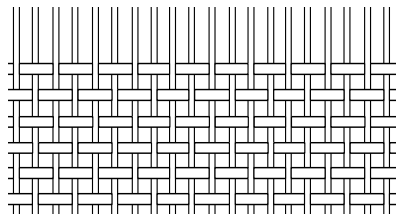
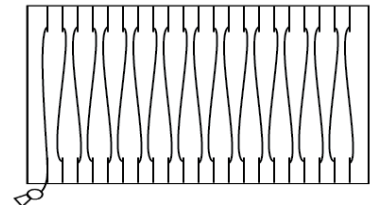
The **Ghiordes** knot, or Turkish knot, is a hand-manipulated stitch used to create pile. Lengths of yarn are looped around warp yarns and held in place by a row of plain weave. The Ghiordes knot adds warmth as well as textural interest and has been used worldwide in both rugs and tapestries.

#### Materials:

- Cardboard, 6 inches square for making a simple loom.
- Tape; large blunt-ended tapestry needle (for weft)
- Warp yarn, any sturdy yarn with a hard twist (linen is a good choice). Minimum 1 yard.
- Weft yarn, wool is preferred but other yarns will work. Choose a firm yarn if you want to cut the pile close; a textured or fluffy yarn might be left uncut as decorative loops. Minimum 1.5 yards.

#### Instructions:

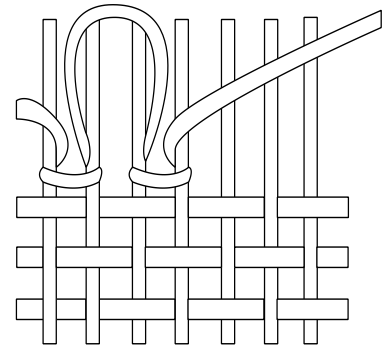
1. Cut slits 1 inch long at  $\frac{1}{4}$  inch intervals along the tops and bottom of the cardboard. Number the slits from left to right: Upper (U1, U2, U3, etc.); Lower (L1, L2, L3, etc.)
2. Tape one end of the warp yarn to the center back of the cardboard. Move the warp to the lower left front of the cardboard by passing it through the slit L1. Pull yarn to keep taut.
3. Move the warp yarn upwards, through slit U1, around the fringe of cardboard, through slit U2 and downward, through slit L2, around the fringe of cardboard, through slit L3, and upwards again. Pull yarn to keep taut.
4. Continue warping the cardboard loom in this pattern until you reach the end of the slits. All of the warp should be on the front of the cardboard. Secure the extra warp with tape onto the center back.
5. Weave six rows of plain weave.





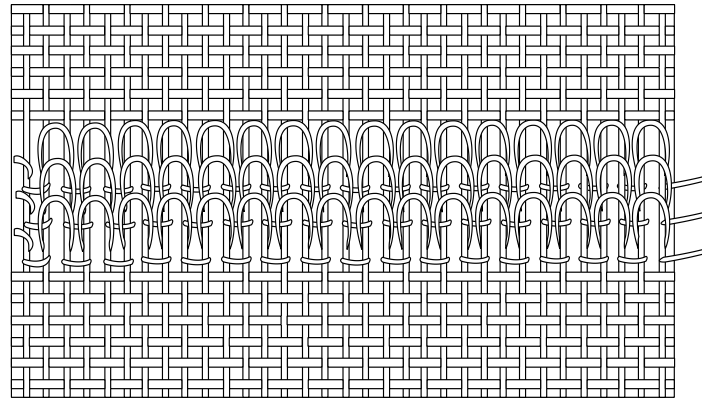
6. Starting from between the first two warp yarns, weave under the first warp, over the first two warps, and under the second warp, ending in the same position. Push knot close to plain weave.

7. Insert a ruler or popsicle stick or make a loop around your thumb between the second and third warp, to keep a consistent loop size. Continue across the row, creating loops of equal size and ending on the right side.



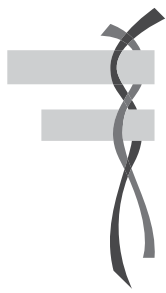
8. Repeat steps 6-7 until you have the amount of knots you want and weave at least 6 rows of plain weave to finish

9. Take off cardboard weave extra warp and weft yarns into back of piece.



Other Resource:

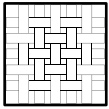
<http://kids.britannica.com/comptons/art-171600/In-the-Ghiordes-knot-two-ends-of-yarn-are-drawn>



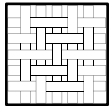
# FABRICATIONS

## Fabrications – Woven Mat

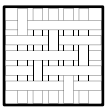
(Plain, twill, satin weaves)



**Plain** weaves wear well, are snag resistant, and have good stability. Plain weaves ravel easily and have lower tear strength than some other weaves.



**Twill** weaves are durable and flexible (think denim!), but may fray easily if loosely woven.



**Satin** weaves are smooth and luxurious and shed dirt easily. Satin weaves are more costly to produce than other weaves and are easily snagged.

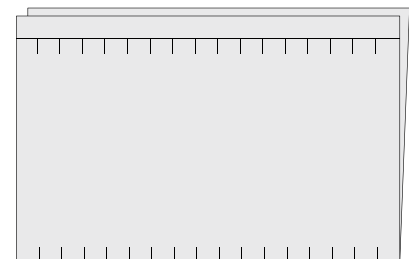
## COMBINE THE THREE WEAVE STRUCTURES TO MAKE A DECORATIVE PLACEMAT

### Materials:

- 4 colors of 9 in. x12in. craft felt (one for base color and one for each weave)
- Tacky, hot or fabric glue
- Scissors
- Ruler

### Instructions:

1. Cover work surface in newspaper or plastic wrap to protect from glue.
2. Cut **plain** weave felt into seven ½ in. wide strips, each 9 in. long. Cut **satin** and **twill** weaves felts each into eight ¾ in. wide strips, each 9 in. long
3. Fold base color felt in half (see illustration) and mark folded edge every ½ in. Draw horizontal line ½ in. from cut edge; mark every ½ in. along horizontal line. Draw vertical lines to connect the ½ in. markings.



4. Cut along vertical lines, being careful to stop at horizontal line; unfold.



5. From one side of the base fabric, insert the first **plain** weave strip and begin over 1, under 1, over 1, under 1, etc. until you reach the other side. Push the **plain** weave strip firmly and evenly alongside base edging.



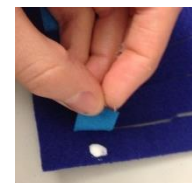
6. With next **plain** weave strips, repeat the above procedure but begin under 1, over 1, under 1, etc. Push woven strip evenly and firmly alongside previous strip. With final **plain** weave strip, repeat the patterning of first strip, pushing evenly next to previous strip.



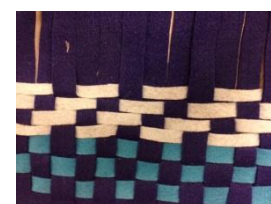
7. Repeat steps 5 and 6 on the opposite edge of the base felt.



8. To secure strips, glue underside of each **plain** weave strip end to base felt edging.



9. With first **twill** weave strip, weave under 1, over 2, under 1, over 2, etc., pushing the strip firmly into the previous row.



10. Staggering the pattern over one count with each new row, repeat the pattern with the next seven **twill** weave strips.



11. To secure strips, glue underside of each **twill** weave strip end to base felt edging.

12. On the opposite edge, with the **satén** weave strips, weave under 1, over 4, under 1, over 4, etc., pushing firmly and evenly into previous strip.



13. Staggering over **two** counts with each new row, repeat the pattern with the next seven **sat**in weave strips.



14. To secure strips, glue underside of each **sat**in weave strip end to base felt edging.



15. Weave the final **plain** weave strip into the center area between the **sat**in and **twill** weaves and glue both ends to base fabric.



16. Trim off any uneven edges and enjoy!

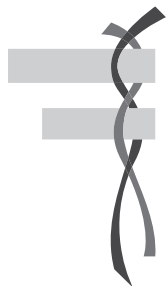


### Design Your Own Project!

- Replace the felt with other materials like ribbon or laminated paper to make a placemat.
- Try your own designs using the three weaves and different sizes and colors of strips.
- Fold and sew the edges together to make a pouch for an I-pad or pencil case.







# FABRICATIONS

## Design Challenge – Tapestry

The word **tapestry** refers to a woven decorative fabric, often characterized by pictorial or interpretive designs. They are used as hangings, rugs, curtains or upholstery. The word *tapestry* also describes a weaving technique that interlaces discontinuous weft yarns in small pattern areas of the warp to create variable patterns.



This is a Design Challenge tapestry – use weaving, wrapping, braiding, twining, and Ghiordes knots to design a unique wall hanging that incorporates at least some of each material provided in the packet. You may also add one material of your own choosing. The illustration at the right is an example – your hanging should be your own creation!

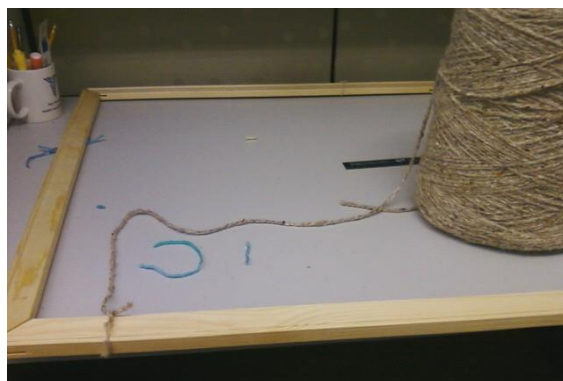
### Materials:

- Large stretcher frame (approx. 28"x 28")
- Piece of paper as large as your frame
- Markers
- Ruler
- Warp yarn (approx. 75 yds)
- Yarn for bottom and top edge stability (approx. 5 yds for plain weave, more for twining)
- Various yarns (approx. 80 yds total)
  - Ours included:
    - 30 yds of white yarn
    - 21 yds of multicolor yarn
    - 4 yds of thick brown yarn
    - 3 yds of pink yarn
    - 12 yds of dark green yarn
    - 7 yds of thick light green yarn
- 1 inch strips of knit fabric (approx. 3 yds)
- Sticks and other natural pieces (approx. 10 yds)
- A material of your choosing
- Long-tooth comb
- Large-holed, blunt-ended tapestry needle (Optional)

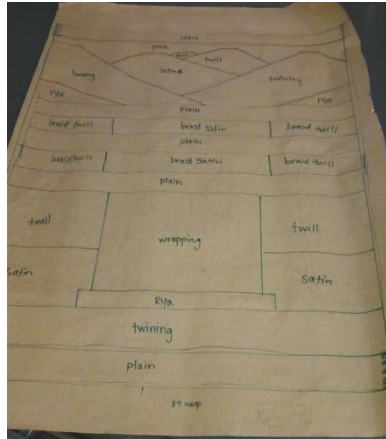
### Instructions:

1. Warp your frame
  - a. Tie a knot with the end of the warp yarn on the top edge of the frame, 3 inches from the top right edge.
  - b. Tightly pull the warp to the bottom of the frame, parallel to the edge of the frame.
  - c. Wrap the warp around the bottom edge of the frame and return to the top edge.
  - d. Repeat this wrapping motion over the frame, positioning the warp yarns evenly and leaving 3 inches on the opposite side of the frame.
  - e. Tie the last warp yarn to the top of the frame

Top of frame



- 



- 
- A close-up photograph of a traditional woven textile, likely a rug or tapestry. The fabric features a dense, textured pattern in shades of brown and tan. A small, colorful, rectangular object, possibly a decorative element or a piece of fabric, is visible near the center of the image. The texture of the weave is clearly visible, showing a complex interlacing of threads.

